2007-05896/

Fall 2000, Vol. 25, No. 3 ISSN 1188-066X

Natural Sciences and Engineering Research Council of Canada

NSERC Contact

Investing in people, discovery and innovation

Peer-Review Fatigue and the Need to Double NSERC's Budget

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www.nserc.ca

Let me begin by thanking all those who took the time to respond to the piece on peer-review fatigue in the last issue of *Contact*. I didn't acknowledge the individual messages, but I read them all. Bill Coderre, our Director of Corporate Development, has also analyzed your responses (see page 3).

The main impression that I have formed from the responses so far is that the workload of peer review for NSERC is substantial, but people are willing to manage it. And they value the system to the extent that they don't want to see it changed in any revolutionary way. But if peer-review fatigue is not a great problem, I have been told that application-writing fatigue certainly is. People are tired of writing increasingly complex applications to too many different programs, most of which offer support in too small portions. NSERC programs are included in this complaint, but other programs are mentioned as well.

If application-writing fatigue is the main problem, then that's the one we should try to solve. We shall leave peer review alone, letting the evolutionary improvement continue, and we will start exploring possible ways of reducing the application-writing problem.

One component of that will be a look at the feasibility of consolidating some NSERC programs.

Grant size is also an issue, and in the rest of this piece I shall describe what we are doing to increase the NSERC budget so that grants might become larger.

We began working on a business case for a major increase in the funding for NSERC right after the presentation of the last federal budget in February. This business case takes into account all the needs that have been discussed in these editorials for several years, as well as new pressures on the NSERC budget arising from the increase in CFI funding, the Canada Research Chairs, and the growth in the numbers of faculty in the natural sciences and

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NSERC CRSNG
Ottawa, Canada
K1A 1H5

Canada Post Postage Paid / Postes Canada Port payé
Bulk third class / En nombre troisième classe
1173
OTTAWA, ONT.

Canada

Contact is published by:

Communications Division
NSERC
350 Albert Street
Ottawa, Ontario
K1A 1H5
Tel.: (613) 995-5992
Fax: (613) 943-0742

It is also published on the Internet at www.nserc.ca/publicat.htm.

Forward address changes to the mailing address above or send an e-mail to comm@nserc.ca.

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NSERC is Canada's instrument for promoting and supporting university research in the natural sciences and engineering, other than the health sciences.

NSERC supports both basic university research through research grants and project research through partnerships among universities, governments and the private sector, as well as the advanced training of highly qualified people.

Continued from cover page

engineering who are active in research. The business case also included an additional amount dedicated to the needs of the microelectronics sector for increased support through NSERC programs. (The sector itself is asking for additional research funds as part of a larger strategic initiative proposed to the government, so the amount in the NSERC business case for the new needs in microelectronics should be seen only as a placeholder for that sector.)

The business case was presented to NSERC Council at its June meeting. Briefly put, the case is made for NSERC annual budgets of the following amounts: 2001-2: $735 million, 2002-3: $907 million, 2003-4: $973 million, and 2004-5: $1,054 million, with slower growth thereafter. These amounts do not include the funding for the NSERC share of the Networks of Centres of Excellence that flows through our budget, since NSERC has no discretion over those funds. For comparison, the NSERC budget for the current year 2000-1 is $547 million on the same basis.

These numbers deal only with the direct costs of research; the indirect costs are being sought from the government by the universities separately. The entire cost of the research done must be paid for somehow, but if the indirect costs are a percentage, say 40%, of the direct costs that NSERC provides, then we believe that they should be 40% of the amount of direct costs needed to get the research done, and not 40% of half that amount.

The business case in the form of a PowerPoint deck, entitled "Budget Prospects" dated June 12, 2000, is posted on the NSERC Web site. We've also prepared a first draft of a prose version of the business case, justifying the numbers and showing what the additional investment will produce for Canada. Because of the pressure of time, this document has already been submitted to the House of Commons Standing Committee on Finance, and if Council approves it in October, it will be made public.

There is no doubt. Research in the natural sciences and engineering is basic to our country's well-being. The CFI and the Research Chairs are important advances for Canada, but the operating costs that will inevitably come with these advances, plus the existing needs of the 9,000 researchers we already support, mean that NSERC's present funding level is simply inadequate. Nothing less than a doubling of NSERC's budget over the next four years will keep Canada's scientists and engineers in the unending race to the front ranks of discovery and innovation.

Four New Members Appointed to Council

On July 5, John Manley, Minister of Industry, and Dr. Gilbert Normand, Secretary of State (Science, Research and Development), announced the appointments of four new members to the NSERC Council:

- **Dr. Christopher Beaumont**, leader of the Dalhousie Geodynamics Group, and INCO Fellow of the Canadian Institute for Advanced Research program in Earth System Evolution;
- **Dr. Tom Calvert**, director of technology for the TeleLearning Network of Centres of Excellence, and founder and chairman of Credo Interactive Inc. of Vancouver, B.C.;
- **Dr. Joanne Keselman**, vice-president (research) and professor of psychology at the University of Manitoba; and
- **Dr. Gretchen Harris**, associate professor of physics at the University of Waterloo.

Biographical sketches of the new members can be found on our Web site at: www.nserc.ca/newsrel_e.htm.

Award-Winning Book Uncovers the Secrets of Ancient Egyptians

Shelley Tanaka's book "*Secrets of the Mummies*" won a 1999 Science in Society Journalism Award – Children's Books category. NSERC is one of twelve sponsors of these annual Canadian Science Writers' Association awards honouring outstanding contributions to journalism in the Canadian media. Tim Nau, NSERC's director of communications, presented the award to Ms. Tanaka in June, at a banquet in Toronto.

Application-Writing Fatigue the Problem, Not Peer Review

Researchers are mostly satisfied with NSERC's peer-review system, but find the sheer number of different research-support programs now in existence an unnecessary drain on their time.

That's the main message we got in response to President Brzustowski's invitation to write to NSERC about "peer-reviewer fatigue."

"The great majority of those who responded tell us that NSERC is doing a good job and that, while we should continue to pay attention to opportunities for improvement, we are already serving them well," said Bill Coderre, Director of Corporate Development, who analyzed the responses.

"They also caution that NSERC should analyze the total program array before making changes in any particular program, and not make changes piecemeal," he added.

The majority of respondents said reviewing is part of a researcher's responsibility and should be done with enthusiasm. "Some suggested that the base of NSERC reviewers should be broadened and observed that too often the same people are expected to do a disproportionate amount of the work," said Dr. Coderre.

The strongest critical feedback was in the area of program proliferation and "application-writing fatigue" (see Dr. Brzustowski's editorial, cover page). A significant number of readers call for a consolidation or reduction in the number of NSERC and other federal programs for research support. They argue that the multiplicity of programs leads to time wasted in trying to understand their differences and writing applications.

Some respondents suggested that, for proven researchers with excellent track records, the application process for Research Grants could be made simpler or review periods longer.

Respondents are evenly split on the value of electronic media to reduce grant selection committee time. About half believe that face-to-face discussions are an essential element of good decision making, while an equal number think that some or even much of the work could be done on-line.

Where do we go from here?

NSERC is already taking steps to address these concerns:

- A fully electronic application process that will allow easier updating of standard information for applicants and better access to documentation for reviewers is being gradually introduced.
- Research Partnerships Program staff are reorganizing to be able to put more emphasis on client service, on recording the reasons for committee decisions, and on tracking research projects.
- A review is also being launched to determine where consolidation of NSERC programs would make sense.
- NSERC might consider a pilot experiment in increased use of electronic communications for Grants Selection Committees.

"The responses we got will be provided, without revealing commentators' names, to the committees that are looking into Grants Selection Committee membership and Research Grants program evaluation. If you have further comments, we'd love to get them," says Dr. Coderre.

Please send your comments to: william.coderre@nserc.ca.

Interview with Dr. Gilbert Normand

Mr. Secretary of State, Good Morning.

A lot is said in today's context of globalization about innovation and the role of science and technology (S&T). How important is S&T for Canadians in particular?

Canada has one of the largest geographical areas of any country in the world, but our population is small. Our country has to deal with its own particular challenges. As a society, we have to be continually innovative and give more importance to research. Canada is always ranked among the best when it comes to quality of life, economic prosperity and social values. But if we are going to maintain and strengthen these assets, we have to keep up the pace and continue to work hard and quickly in terms of innovation. So Canadian society depends heavily on S&T, and because we are short on resources, compared to the U.S., for example, our only choice is to be more innovative than ever.

What is the Canadian government's TOP priority in S&T today?

In the last few years, especially the last three years, the Canadian government has invested a great deal in S&T. So we have demonstrated that we are firmly committed to research. The Government is now taking an approach that is both global and targeted. Global, because it is investing in all channels for research – colleges, universities, industry, laboratories, research centres. Targeted, because it is giving priority to what are considered sensitive areas of science. Obviously, this does not mean we're neglecting other areas of research, but we are putting our efforts first and foremost into the areas where Canada excels, such as genetics, engineering, medical and pharmaceutical research. The government wants to stimulate research at different levels, but in specific scientific niches.

Dr. Gilbert Normand, Secretary of State (Science, Research and Development)

Do you think the public's attitude to science is changing? Can you see a growing interest in science?

I think the public has always been very much in favour of scientific development. If people are taking more interest, I think it's because the scientific world is doing a better job at communication. In my speeches, I often remind people that it is up to the universities and the researchers to keep Canadians well informed, for two reasons.

First, nowadays scientists are required to explain the reasons for their research and to demonstrate the results of their work. They have to aim at greater transparency. I must say that this applies not only to scientists. The Government itself also has to work harder in this regard. The public does not want to be left uninformed. Think of the uproar "mad cow disease" and genetically altered food have caused in Europe. It seems to me that public debate on all technologies would be a good thing here in Canada.

Second, researchers are increasingly being asked to work in a multidisciplinary way, because sectors of activity are becoming less separate. Obviously, communication then becomes absolutely necessary.

But there is still a lot to be accomplished in terms of information and making that information accessible to the public. I deplore the fact that there is still a noticeable lack of scientific information provided, both in the electronic media and in the press. Of course, there are some excellent scientific magazines on the market, but not very many. Why don't the large daily newspapers publish a weekly section on scientific discoveries? I also think we should make more of an effort with young people, encouraging them to go into the sciences. I often remind young people that a career in science has a lot to offer – including excellent salaries and a certain amount of prestige. In my view, the Government should invest more in research and also in making the public aware of the work being done in the sciences.

What do you think of the work that NSERC and its researchers are doing in Canada?

I can sum that up in a word: phenomenal. NSERC has always worked very hard to achieve the objectives it has been given. I am particularly impressed by all it has accomplished to showcase our scientists and to promote science among the young. The quality of the scientists it funds is quite extraordinary.

The President of NSERC, Dr. Tom Brzustowski, has stated publicly that the Council's budget should double by 2004. What are the chances that the Government of Canada will provide that money?

We can understand that NSERC, like other councils, would appreciate a major increase in its budget. Certainly, Finance Minister Paul Martin continues to give the same priority to research, innovation and development as to health and tax cuts. I think the fact that Mr. Martin has said publicly that the Government of Canada plans to improve the country's low ranking with regard to R&D (15th compared to the other OECD countries) is a great step forward. We can conclude that the message has "gotten through" and research will continue to be one of the Government's priorities. This is a good sign for the scientific world. I can't tell you if NSERC's budget will double, but we can be optimistic about new spending on research in the next budget.

"The more the public is convinced that research is important for their well-being, the more supportive they will be of government spending on the sciences."

What do you think scientists could do to help NSERC get this increased budget?

Again, and always, make the public aware that there are good reasons for the work they do, and demonstrate the benefits of innovation to Canadians in terms of economic prosperity and quality of life. The more the public is convinced that research is important for their well-being, the more supportive they will be of government spending on the sciences.

You are a medical doctor by training; you have been Secretary of State in other areas of scientific interest. What fields of science are most exciting to you?

To tell you the truth, I'm fascinated by everything in the sciences – biotechnology, astronomy, aerospace, telecommunications, manufacturing of new materials – I'm not a sectarian!

You have been Secretary of State (Science, Research and Development) since August of 1999. What aspects of your work do you enjoy most?

Meeting the people who have designed research projects. And visiting laboratories. In fact, I often find that the laboratory visits are too short!

Right now I'm working very hard towards the foundation of a Canadian Academy of Science. You know, Canada is the only G7 country that doesn't have one. On October 4th and 5th, we're holding a national meeting to get scientists' ideas on this project, which is very dear to my heart. I'm not trying to reinvent the wheel, but I would like to see our academy reflect our country and our vision of scientific development.

Newsbureau at Work for You

Following on from the prominent press coverage we created this spring for psychologist Dr. Helen Bialystok of York University, the NSERC Newsbureau has successfully placed more research stories with the media.

Look out this fall for the Discovery Channel's @Discovery.ca features on:

- Dr. Spencer Sealy, University of Manitoba, and his work on cuckoo cowbirds;
- McGill University's Dr. Martin Buehler's two- and four-legged robots;
- Dr. Douglas Chivers, University of Saskatchewan, who puts the fear of predators back into hatchery-reared fish;
- Memorial University's Dr. David Brodbeck's work on pigeons' memory;
- Dr. Maydianne Andrade, University of Toronto, who is studying the reproductive benefits of self-sacrifice in male redback spiders, a species of black widow.

These are examples of stories that the team has successfully promoted to journalists, independently of the coverage gained by our press releases. If you suspect that your work could be communicated either to the public at large or to any interested sector with its own dedicated media, please contact us at *newsbureau@nserc.ca*. We'll be delighted to hear from you.

Changes Add Flexibility to RN Program

NSERC has increased the flexibility of its Research Networks (RN) program by changing the competition schedule and the program requirements.

Beginning in 2001, The Letters of Intent (LOIs) may be submitted at any time. The Research Networks Selection Committee will review them three times a year, following submission cut-off dates of February 1, June 1 and October 1. Once their LOI is accepted, applicants will have up to six months to submit a full proposal, and the review process will begin as soon as a proposal is received. These changes will enable applicants to take into consideration the schedules of their co-applicants and non-academic participating organizations when developing the proposal. Applicants will also have more time to consult with NSERC staff and submit draft proposals for comment.

The requirement that the researchers involved in the network come from three non-affiliated organizations has been eliminated. This means, for example, that a network could involve researchers from two universities with researchers from a hospital affiliated with one of the universities. NSERC's Committee on Research Partnerships approved the change in May, recognizing that localized networks or clusters are a rich breeding ground for technical innovation and should be encouraged. All other requirements for the program remain unchanged.

For more information on the Research Networks program, visit www.nserc.ca/programs/rpg_e.htm, or contact the Strategic Projects and Research Networks team at (613) 996-2717 or at strgr@nserc.ca.

Environmental Assessment at NSERC

You may have noticed some changes to the application form as a result of modifications to NSERC's environmental assessment (EA) process.

All Canadians share the responsibility for protecting our natural environment. Members of the university research community can do their part by planning their research activities so as to avoid harmful effects on the environment. It is up to NSERC to identify the activities that might have an environmental impact and determine the follow-up required; to do so, we've had to make some changes to our procedures.

Appendix B (Form 101) is a pre-screening tool that will help us determine whether or not an environmental assessment is required under the *Canadian Environmental Assessment Act*. It is a one-page checklist that identifies activities that might have effects on the environment. It also avoids duplicating information that might already be required by another federal department, by identifying licences or permits issued to applicants by federal departments that might trigger an EA of the proposal.

NSERC's EA review process is conducted separately and, where possible, in parallel with peer review. Staff examine the pre-screening forms and the proposals in the context of EA, while the research proposals themselves are making their way through the regular peer-review process. The EA review doesn't affect the peer review of proposals.

If, as a result of the examination of the pre-screening forms, NSERC determines that the proposal is subject to the *Canadian Environmental Assessment Act* and requires further study (usually a screening), the applicant and the university research grants office will be informed and advised of the next steps.

If the proposal is recommended for funding and the information is not sufficient for NSERC to make a decision on the pre-screening or the screening, the award will be marked "conditional," and the applicant and the university research grants office will be advised. **NSERC cannot release funds until the EA process is complete and a decision is made in accordance with the Act.**

To help prevent delays, applicants are urged to consider the environmental implications of their research activities as they develop their proposals, and to complete the forms carefully.

NSERC expects that relatively few proposals will be subject to screening and that most of the screenings will be simple and straightforward.

You can get more information on NSERC's EA process, including details on how to complete the forms, at www.nserc.ca/resear_e.htm. Applicants seeking general information on environmental assessment and the *Canadian Environmental Assessment Act*, can point their browsers to www.ceaa.gc.ca.

In Memoriam

The NSERC community mourns the recent loss of two eminent Canadian researchers.

Michael Smith, the Canadian Nobel laureate (Chemistry, 1993) for whom NSERC's Michael Smith Awards for Science Promotion were named, died on October 4. He was 68. While he won the Nobel Prize for his revolutionary genetic research – paving the way for today's biotechnology breakthroughs – it was his efforts since then to help more people understand science that captured the imagination and respect of people across Canada.

The winner of the first (1991) Canada Gold Medal for Science and Engineering, biotech pioneer Raymond Lemieux, died on July 22, at the age of 80. Renowned worldwide for his seminal contributions to the field of carbohydrate chemistry, he was instrumental in the development of NMR spectroscopy as an analytical tool, and the development of new antibiotics.

Task Force Recommends Measures to Rebuild Canada's Role in Northern Research

The NSERC/SSHRC Task Force on Northern Research recently released its recommendations at the 51st AAAS Arctic Science Conference in Whitehorse. The Task Force urges Canada to rebuild university-based northern research in order to help northerners cope with the unprecedented social, physical and environmental challenges currently facing the region. It argues that northern research is also needed to help Canada to honour international obligations and protocols, to give input on research issues of global importance and to reinforce Canadian northern sovereignty.

The Task Force found that a lack of government funding and the rising costs of research have both contributed to Canada's withdrawal from northern research in recent years. As a result, Canada's ability to perform northern research and to meet its national and international responsibilities is significantly threatened.

The report calls for new partnerships between universities and northern communities and for the direct involvement of northerners in research and training in the natural sciences, engineering, social sciences and humanities. It proposes a five-point program to rebuild Canadian northern research:

- establish 24 university research chairs – 12 senior and 12 junior – dedicated to northern research;
- create 40 northern graduate scholarships and 40 postdoctoral fellowships;
- support 70 strategic research projects of high social, industrial, or environmental relevance (modelled on NSERC's Strategic Projects program);
- build partnerships between northern communities and university researchers (modelled on SSHRC's Community-University Research Alliance program); and
- provide funding for critical equipment, infrastructure, and logistical needs.

"These measures will allow us to interest young researchers in the North, make sound policy decisions on northern issues, meet major international commitments in the circumpolar region, and re-assert Canadian sovereignty in the North," said Task Force chair Dr. Tom Hutchinson of Trent University.

NSERC and SSHRC Councils have welcomed the report, and have agreed to explore ways of funding it from their existing budgets. However, full implementation will require substantial new funding from the federal government.

The text of the report *From Crisis to Opportunity: Rebuilding Canada's Role in Northern Research*, including policy recommendations, can be read at www.nserc.ca.

For more information, contact Elizabeth Boston at (613) 995 5695 or at elizabeth.boston@nserc.ca.

Reallocations Steering Committees Are Now Up and Running!

This summer, 20 Steering Committees were established to develop Reallocations submissions on behalf of each discipline area supported by NSERC. Membership lists are posted on NSERC's Web site at www.nserc.ca/programs/real2000/news-bul5-e.htm. Members of NSERC's Grant Selection Committees (GSCs) considered over 200 nominations received from the community this spring and finalized the composition of the Steering Committees. We thank everyone who participated in this process.

On October 4, the chairs of the Steering Committees (or their representative) met with NSERC staff in Ottawa to discuss the reallocations process in detail. A summary of the meeting will be posted on the Web later this month.

Steering Committees are community-based groups, not NSERC committees. Community input to their work is critical to the goals of the Reallocations Exercise and to the realization of the disciplines' aspirations. In developing the vision and strategy for the discipline, as well as in bringing forward specific funding proposals that are supported by their community, Steering Committees are encouraged to consult widely with individual researchers, universities, societies and other bodies. We expect that Steering Committees will probably want to establish Web sites to facilitate communications with their community during the preparation of the submissions. NSERC's Web site will be linked to these sites.

We encourage you to visit NSERC's Reallocations site frequently to obtain up-to-date information about the Exercise and to find out if a Web site has been set up for your Steering Committee. Be sure to participate in discussions, answer surveys or provide comments to help your Steering Committee with its important task!

Best Practices for Ethical Research Now on Web

Following the publication two years ago of *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*, institutions revised their ethics policies and sent a copy to the Councils. The latter provided feedback this past summer and identified some "best practices," which are available at: www.nserc.ca/programs/ethics/english/index.htm. If you have any questions, call Anne-Marie Monteith, NSERC's Research Ethics Officer, at (613) 992-0842 or write to her at anne-marie.monteith@nserc.ca.

At the request of the three granting councils, the National Council on Ethics in Human Research (NCEHR) will continue to offer services to the university community in the form of site visits and regional workshops. It is also planning a national conference to be held in spring 2001.

Interested in the ethics of research involving human subjects? You can join the REB LISTSERV at: ncehr-cnerh.org/english/listserv.htm.

Changes have been made to the publication *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*. The latest version can be found at: www.nserc.ca/programs/ethics/english/policy.htm.

New Outreach Support for Researchers and Businesses

Using existing funding mechanisms, NSERC and the National Research Council's Industrial Research Assistance Program (IRAP) have created a new funding initiative for Canadian researchers and small and medium-sized enterprises (SMEs) to stimulate partnerships both internationally and at home.

Canadian researchers can now request support for travel costs for International Exploratory Visits that could lead to prestigious international R&D collaborations. (The costs of travel to attend conferences or to collaborate on research are not included.)

Canadian researchers can also apply for funds to participate in international R&D projects such as those sponsored by the European Union Fifth Framework Program or the Intelligent Manufacturing Systems (IMS) consortium program. NSERC will contribute towards the costs of the academic partners, and IRAP will contribute towards the costs of industrial participants, who must also share in the cost.

For more information, contact NSERC's Jean-Pierre Labelle at (613) 992-7106 or at jean-pierre.labelle@nserc.ca.

For more information on IRAP's SME international elements, contact Denys Cooper at (613) 993-7620 or at denys.cooper@nrc.ca; for SME domestic elements, contact Steve Palmer at (613) 993-3996 or at steve.palmer@nrc.ca.

Program details can be found at www.nserc.ca/indus_e.htm.

A detailed guide on NSERC mechanisms that facilitate international collaboration is available at www.nserc.ca/intern/international_e.pdf.

Jody Sugrue

Record-Breaking Team

The Queen's University Solar Vehicle Team now holds the world record for distance traveled in a solar car (7044 km). According to Event Project Manager Alexis Tremblay, "The team's cross Canada tour, SunTrek 2000, had two primary goals: the first was to cross Canada on the power of the sun; the second was to educate people about solar energy, science and technology, and our sponsors" (one of which was NSERC). They succeeded on both counts.